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OF PLANT PROTECTION

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DISCOVERIES AND CURRENT EVENTS *

Angola: Locust Movements (*Nomadacris septemfasciata* and *Locusta migratoria migratorioides*) (1).

October, 1934.

In all the table lands of the Colony the activities of the swarms has diminished considerably owing to the rains and in some regions the locusts have completely disappeared.

On the eastern border the situation is much worse as apparently the invasions do not show any pronounced tendency toward forming large migratory swarms.

The coast is beginning to be invaded by swarms coming from the frontiers. The majority of these swarms are already fully developed. The river valleys have served as lines of penetration by the swarms.

There is reason for thinking that during this year the swarms in all the coastal zone of the Colony will be much more numerous than last year.

The species which continues to be most common is *Nomadacris septemfasciata*.

November, 1934.

Owing to the rains the situation on the table lands of Malange and in the South of the Colony continues to improve generally, chiefly with regard to swarms.

At present a great recrudescence of swarms is reported in the districts in the North and on the coast, the exodus from the interior towards the coast is increasing, from the South of Benguela towards the neighbourhood of the river Zaire. The flight is increasing directed at present from East to West, and sometimes from South to North, although some swarms are flying South. In a short time all the farms and river districts on the coast will be infested by the swarms and also, though later, by egg pods and hoppers.

Already numerous outbreak centres have been discovered in Bié, Malange, and North Quanza, it is believed that the same will shortly occur in other districts.

* Under this and the next heading the countries are arranged in French alphabetical order.

(1) Communication from Mr. JORGE DE BARROS RODRIGUES QUEIROZ, Agronomy Engineer attached to the Service of Locust Control, Luanda, transmitted to the Institute by the Government General of the Colony.

December, 1934.

In comparison with the previous month it may be said that the situation has become greatly aggravated in almost all the Colony, principally in the provinces of Huila, Benguela, and Luanda, due, chiefly, to various invading swarms from the Belgian Congo and, probably, from the South West of Africa or the frontier regions of that territory. The great scarcity of rain has aggravated the situation greatly. It has already been ascertained that the area covered by layings is very considerable, no sure forecast can be made as, in the first place, reports received from the various zones on the movements of locusts are incomplete and, in the second place, the attacks of parasites, principally fungi and Diptera, is becoming an important factor in the destruction of swarms and outbreak centres.

Argentine Republic: Fungous Parasites of Scale Insects of Fruit Trees (1).

It is a universally known fact that certain fungi periodically cause the death of a great quantity of insects, thereby exercising a biological control.

In the Argentine Republic the work that has been carried out on the use of these micro-organisms has been almost entirely confined to the fungi which attack the locust, the principal worker in this field being L. Bruner.

Several years ago my attention was drawn to some species of fungi which frequently accompany the scale insects of fruit trees in this country and whose habits have been unobserved or interpreted erroneously by the few authors who studied the subject.

With regard to the agricultural importance of this question which we will now discuss, it is enough to mention that A. C. Lundin, formerly Chief of the Experiment Station 'Centinela', which the North West Railway established at San José, Misiones, considers that it will not be possible to control the scale insects which attack the citrus plantations without the help of the entomogenous fungi which have increased in this locality in a manner that is truly extraordinary. The same thing could be said of other fungi which have been found in the province of Buenos Aires and the Islands of the Delta of the Paraná, an environment so propitious for their development that a veritable biological equilibrium has been established in the diffusion of various scale insects, very difficult to control with the common insecticides on account of the form they adopt to protect themselves.

In this communication we will deal with the following fungi:— 'corona blanca', 'hongo negro', 'cabeza roja', 'cabeza blanca', 'costra canela', and 'hongo felpudo negro'.

The fungus 'corona blanca' (*Cephalosporium lecanii* Zimm.) is very common on *Mesolecanium deltaa*, though by no means rare on *Lecanium oleae*, *L. persicae*

(1) Communication from the official correspondent of the Institute, Mr. JUAN B. MARCHIONATTO, Agronomy Engineer, Director of the 'Sanidad Vegetal', Ministry of Agriculture, Buenos Aires.

and *L. perinflatum* in the province of Buenos Aires and the Islands of the Delta of the Paraná.

The scale insects attacked by this fungus are covered with a mycelium of a whitish colour which leaves the insect fixed in the place where it has died. In adult insects the scale finally drops off, leaving the body covered with an abundant yellowish powder which represents the spores of the parasite.

The fungus 'negro' (*Myriangium duriaei* Mont. and Berk.) is very common in the province of Buenos Aires on *Aspidiotus perniciosus*; since the year 1932 it has been also observed on *Chrysomphalus aurantii* in the region of Pindapoy.

The scale insects attacked by this fungus are transformed into small shapeless scabs, hard and black in colour, which easily adhere to the substratum or organ of the plant attacked by the scale insect (it is also found associated with another fungus 'cabecita roja', *Fusarium aspidioti* Saw.).

The fungus 'cabeza roja' (*Sphaerostilbe aurantiicola* Petch) is frequently found on *Chrys. aonidium* in the whole coastal region and especially in the province of Corrientes and the government of Misiones. It has recently been observed on the *Chrys. aurantii* *.

The scale insects attacked are covered with a mass of waxlike spines of a purple colour which are very easily detached from the body.

The fungus 'cabeza blanca' (*Podonectria cocoicola* Petch.) is found in great quantities on *Lepidosaphes beekii* in the provinces of Tucumán and Corrientes and in the government of Misiones.

The scale insects attacked are entirely covered with small, white, conical protuberances.

The fungus 'costra canela' (*Septobasidium albidum* Pat.) accompanies *Lepid. beekii* in the whole citrus fruit growing region along the coast.

The scale insects attacked are enveloped in a crust, brown or cinnamon colour with white edges, which adheres firmly to the organs of the plants infested by the insects. This fungus has been erroneously considered a parasite of the plant when in reality its injurious action is due to the difficulties which the organs of the plants attacked have in performing their normal functions.

The fungus 'felpudo negro' (*Peziotrichum saccardinum* Rang.) was observed for the first time in 1932 in the first section of the Islands of the Delta of the Paraná on *Aspid. perniciosus*.

The scale insects attacked are covered with a kind of black felt which finally surrounds the branches entirely. This fungus has been considered in Brazil a parasite of the branches of the pear tree.

The fungi 'costra canela' and 'felpudo negro' develop in such density as to prevent the normal functioning of the leaves and branches and are able to cause the death of the plants if their action is prolonged for any length of time.

* A very similar species is *Sphaerostilbe flammca* Tul. which lives as a parasite of the 'cochinilla blanca' (*Leucaspis pusilla*) of the pine.

Brazil: Preliminary List of Diseases of Ornamental Plants in the State of Minas Geraes (1).

Due to a particularly favourable climate, flowering plants, grown in the open in Minas Geraes, attain a perfection difficult to surpass in any other part of the world. Such flowers as dahlias, gladiolus, zinnias, sweet peas and roses are especially notable for their exceeding beauty, but are not produced on a large commercial scale because of the lack of accessible markets.

In addition to the diseases commonly present on ornamental plants in this State, as seen by the list given, there are certain affections which appear during or after hot rainy spells, more frequently in those months between December and April, or the wet summer months.

The first of these is flower blighting caused by *Botrytis vulgaris* Fr., recorded on the following flowering plants: *Begonia*, *Dahlia*, *Dianthus*, *Gladiolus*, *Lathyrus*, *Pelargonium*, *Polianthes tuberosa*, *Rosa*, *Sanchezia nobilis*, *Watsonia iridifolia*, and *Zinnia* sp.

The second is collar rotting or basal rot, a common symptom of which is wilting. Two different pathogens have been found associated with this malady, one, *Rhizoctonia solani* Kühn, destroying plantings of *Dianthus*, *Impatiens*, *Cyanotis*, *Silene* and *Viola*, and the other, *Sclerotium rolfsii* Sacc., attacking *Amaryllis*, *Antirrhinum*, *Dahlia*, *Dianthus*, *Papaver*, and *Zephyranthes*. In the case of the bulbous or tuberous plants of this latter group, further loss occurs in the form of rotting in storage.

ACALYPHA RUBRA.

Cercospora acalyphae Pk.

Leaf spot

ALTHAEA ROSEA.

Puccinia malvacearum Mont.

Rust

ANTIRRHINUM SP.

Heterodera radiculicola (Gr.) Müller

Root knot

BEGONIA SP.

Phyllosticta begoniae Rangel

Leaf blight

BELLIS SP.

Oidium sp.

Powdery mildew

CALENDULA OFFICINALIS.

Cercospora calendulae Sacc.

Leaf blight

CAMELLIA JAPONICA.

Pestalozzia theae Saw.

Gray leaf blight

CANNA INDICA.

Puccinia cannae Winter

Rust

(1) Communication from Mr. ALBERT S. MÜLLER, Professor of Phytopathology, Higher School of Agriculture and Veterinary Science, State of Minas Geraes, Viçosa, transmitted to the Institute by Mr. J. C. BELO LISBÔA, Director of the above mentioned School.

CHRYSANTHEMUM SP.

Oidium sp. Powdery mildew

DAHLIA SP.

Cercospora grandissima Rangel Leaf blight

Phyllosticta dahliaecola Brum. Leaf spot

Oidium sp. ³⁵⁵ Powdery mildew

Mosaic ^{1711, 242}

DIANTHUS SP.

Alternaria dianthi Stev. & Hall. Leaf blight

Septoria dianthi Desm. Leaf spot.

EUPHORBIA (POINSETTIA) SP.

Cercospora pulcherrima Tharps. Leaf spot.

GLADIOLUS SP.

Mosaic ^{17, 628}

HIBISCUS SP.

Heterodera radiculicola (Gr.) Müller Root knot

HYDRANGEA HORTENSIA.

Cercospora hydrangeae Ell. & Ev. Leaf spot

IMPATIENS BALSAMINA.

Cercospora impatiensis Bauml. Leaf spot

Oidium sp. Powdery mildew

LILIUM SP.

Mosaic ^{xiii, 169}

LOBELIA SP.

Cercospora lobeliae Kell. & Sw. Leaf spot

NERIUM OLEANDER.

Gloeosporium oleandri Sacc. Anthracnose or leaf spot

ROSA SP.

Actinonema rosae (Lib.) Fries Black spot

Cercospora rosaeicola Pass. Leaf blight

Oidium leucoconium Desm. Powdery mildew

Phragmidium subcorticium (Schr.) Went. Rust

Sphaceloma rosarum Jenkins Leaf spotting

SYRINGA SP.

Cercospora lilacis (Desm.) Sacc. Leaf spot

ZINNIA SP.

Cercospora atricincta H. & W. Leaf spot

Oidium sp. Powdery mildew

Mozambique: Locust Movements (*Nomadacris septemfasciata* and *Locusta migratoria migratorioides*) (1).

Information relative to the Months of October and November, 1934.

Nyassa District. — Extensive movements of swarms have been reported coming from the North (Tanganyika Territory) and flying South. Other swarms coming from Nyasaland passed over Mandimba flying West.

Cape Delgado District. — A swarm was reported in October. In November the locust movements in this district were of little importance. The small swarms reported at the beginning of the month flew from East to West.

Tete District. — In the middle of September various swarms, coming from the North of Nyasaland, descended the Chire valley, some followed the Zambesi towards Massingire and Leste and the others flew South towards the territory of Manica and Sofala. At the end of this month locust movements towards the North diminished and swarms coming from the territory of Manica and Sofala crossed the Zambesi and entered this district.

In the circumscriptions of the North-East region of Tete the locust movement was of small importance though it increased towards the end of the month in the North.

Locust movements during the months of October and November are unknown.

Mozambique District. — In October locust movements were almost nil. The adult swarms reported disappeared for the greater part on account of *Empusa grylli*. No information has been received relative to the month of November.

Quelimane District. — At the beginning of October the frontier regions of Nyasaland were invaded by large and numerous swarms extending slowly towards other regions and it may be said that by the end of the month locusts had invaded the whole of the district except the regions of Leste do Chinde, Pebane and Molocué, situated in the North of the district. These swarms have caused great damage. No information has been received with regard to the month of November.

Inhamitanga District. — In October there was a certain increase in locust movements in various directions. In November the movements diminished and displacements were from North to South and afterwards towards the West. The central part of the district was the most invaded, few swarms being reported in the frontier regions of the South. No laying has been reported.

(1) Communication from Mr. JULIO GARDÉ ALFARO CARDOSO, Chief of the Entomological Section, Lourenço Marques, transmitted to the Institute by the Director of the Agricultural Services of the Colony.

Lourenço Marques District. — In October large swarms were reported moving from South to North. Some entered the frontier at Catuane coming from Zululand where the swarms had been attacked by aeroplanes, the dust cloud thrown by them having caused no damage to cattle. However, with regard to the means of control against swarms, in spite of the tests carried out in the Union of South Africa with aeroplanes, no practical and efficacious means has yet been found. Flame throwers are very costly and, as they cannot be used at night, very special conditions are necessary for their employment.

In the month of November, the swarms moved about generally from South to North, and to a less degree from East to West, having caused considerable damage. It may be considered that the whole of the regions in the South were invaded especially by swarms coming from Zululand and Swaziland which united with those already existing in the valleys of Incomati and Maputo. Laying was reported at the river Tembe y Xanavane; in Incomati the destruction of hoppers is being carried out.

It has been noticed, moreover, that the number of males greatly exceeds females. There has been evidence of the existence of parasitised locusts.

Territory of Manica and Sofala. — This Territory has been completely attacked and the destruction caused by locusts is of considerable importance. The situation is much worse than at the same time last year. The movement is generally from South to North and laying has been reported in various places. In the country round Sena Sugar, along the Zambesi, 10 to 15 sacks of hoppers have been collected daily. Hoppers have appeared in the circumscription of Neves Ferreira.

Greece: Losses caused by Diseases, Pests, and Meteorological Conditions (1).

The Phytopathological Institute Benaki at Kiphissia has undertaken the work of estimating the losses caused to agricultural production in Greece by crop diseases, pests and meteorological conditions.

An inquiry made during two consecutive years in collaboration with the agricultural Services has shown that the damage caused amounts, in drachmai, to the following figures:—

For the year 1932, the value of agricultural products amounted to 12 751 059 000; damage caused by animal pests amounted to 585 553 000, those caused by vegetable parasites to 548 058 000, and those by meteorological conditions to 1 049 866 000.

For the year 1933 the value of agricultural products amounted to 14 576 148 000; damage caused by animal pests amounted to 735 087 000, those by vegetable parasites to 503 637 000, and those by meteorological conditions to 854 373 000.

(1) Communication from the official correspondent of the Institute, Professor Dr. C. A. ISAAKIDES, Technical Adviser to the Minister of Agriculture, Athens.

Southern Rhodesia: Locust Invasion, 1932-1935 (I).**Monthly Report No. 26. January, 1935.**

During January the locust position has shown progressive improvement and at the end of the month it can be stated definitely that the Colony has been saved through natural agencies from what threatened to be a phenomenal hopper outbreak.

Not only have the hatchings on the whole been infinitely lighter and more limited in distribution than the distribution of egg-laden winged locusts, or even reports of egg-laying indicated, but *Empusa grylli* has quickly appeared amongst the hoppers in the more humid districts and has apparently been responsible for very heavy mortality.

At the end of the month there remain only two districts, namely Wankie and Nyamandhlovu, both adjacent to the western border, where according to report the position is at all serious.

Red Locust (*Nomadacris septemfasciata*, Serv.).

Practically all specimens received at Salisbury have belonged to this species.

The hopper stage has been mainly in evidence and very few swarms of fliers were reported up to the middle of the month. It is, however, to be noted that the weather was extremely wet and largely overcast, tending to depress activity. Comparative absence of winged swarms does not necessarily imply similar absence of scattered individuals, and there were abundant indications of disintegration of the winged swarms in December.

About the 19th a recrudescence of invasion commenced, large and healthy winged swarms being reported to be coming in from N. Bechuanaland flying in a westerly direction, the districts most involved being Wankie, Nyamandhlovu and Bulalima-Mangwe. These incoming swarms were in egg-laying condition and are reported to have laid eggs freely in several districts. Egg-laying has also been reported during the month in several localities in the Mazoe district and in Ndanga, Gutu, Makoni, and Bulawayo districts.

Tropical Migratory Locust (*Locusta migratoria migratorioides*, Rcm. & Frm.).

The only record of this species during the month was the unexpected discovery of a swarm of fifth-stage hoppers and newly matured adults in the Hartley district on the 3rd. The early layings by this species seem generally to have failed, and heavy hatchings anticipated in the Wankie district and the Zambesi Valley, in the Lomagundi district, have failed to materialise.

(1) Communication from the official correspondent of the Institute, Mr. RUPERT W. JACK, F.F.S., Chief Entomologist, Department of Agriculture, Salisbury, Southern Rhodesia.

Brown Locust (*Locustana pardalina*, *Wlk.).

On the 25th of the month advice was received from the Union Department of Agriculture to the effect that swarms of this species were flying in N. Bechuanaland and that some were close to the Rhodesian border. No swarms of the Brown Locust have, however, been reported as yet within the colony. It would appear that the Colony is in danger of invasion by this species during the coming dry season although this will depend upon the success or otherwise of the next generation in Bechuanaland.

Enemies and Disease.

The White-bellied Stork (*Abdimia abdimii*) has been very abundant and has been reported as attacking the hoppers in certain districts. The White Stork (*Ciconia alba*) has also been reported, although it has not been much in evidence around Salisbury.

There have been several verbal reports of parasites, possibly *Blaesoxipha* sp. in adult locusts.

Almost all egg deposits seem to have been attacked in a varying degree by *Stomatorrhina*.

The Locust Fungus (*Empusa grylli*) has attacked hoppers freely in the second stage. The major portion of the Colony seem now to be thoroughly infested with this disease and, unless abnormally dry weather supervenes, it is difficult to foresee extensive survival to the adult stage, except perhaps in the western district.

Outlook.

The outlook for the present and next season is very encouraging as far as the Red Locust is concerned, but, as already stated, trouble may be experienced with the Brown Locust, and the Tropical Migratory Locust is an unknown quantity.

It is to be realised, however, that in the course of the previous swarm cycle the Red Locust remained in South Africa for a large number of years, notwithstanding the presence of *Empusa*, and that it demonstrated its capacity for recrudescence after being reduced to small numbers by natural agencies. The cycle may now die down altogether or an uncertain period of years may witness outbreaks of varying intensity.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Germany. — An amendment, dated 21 February, 1935, to the provisions concerning the protection against San José scale [*Aspidiotus perniciosus*] and the apple maggot [*Rhagoletis pomonella*] [see this *Bulletin*, 1934, No. 10, p. 221] established that railway waggons for carrying fresh fruit, living plants and parts of living plants subject to phytosanitary inspection, originating from Hungary, should have their side doors sealed. The seals should be marked 'M. Kir. Növényvédelmi Szolgalat Budapest' (Royal Hungarian Service of Plant Protection, Budapest). (*Ämtliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1935, Bd. VII, Nr. 3, S. 28).

Germany (Anhalt). — By Decree of 28 January, 1935, modifying the Police Ordinance of 31 October, 1928 [see this *Bulletin*, 1929, No. 6, p. 83] concerning the control of field and forest pests, provisions have been established for the control of the Beet Leaf Bug [*Piesma quadrata*].

The Police authorities are authorised to declare infested all districts where this insect has caused serious damage. In these districts the control is compulsory for all beet-root growers.

In all fields intended for growing beet-roots, it is necessary, before the final sowing, to sow beet-roots intended to act as traps. These beet-roots should be sown so as to form strips at least 4 metres wide and running the entire length of the field.

The young plants growing in these strips should be dug in as soon as they have been penetrated by the insects. The epoch at which this work should be carried out will be fixed by the Police authorities. The final sowing cannot be made until after the snare-strips have been dug in.

On application by the owner, in exceptional circumstances, these snare-strips need not be sown, although he cannot sow his beets until after the snare-strips in neighbouring fields have been dug in.

It is also forbidden to sow beet-roots in gardens before the snare-strips in neighbouring fields have been dug in.

Provisions for establishing and digging in these snare-strips will be published. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1935, Bd. VII, Nr. 3, S. 28-29).

Germany (Oldenburg). — By Decree dated 4 February, 1935, provisions have been laid down concerning the protection of fields and gardens against pigeons. These provisions correspond with those adopted in Prussia by the Decree of 13 December, 1934 [see this *Bulletin*, 1935, No. 4, p. 86]. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1935, Bd. VII, Nr. 3, S. 29-30).

Germany (Prussia). — By Police Ordinance of 6 February, 1935, the control of the apple sucker (*Psylla mali*) has been made compulsory in the circumscription of Stade, province of Hanover.

All owners of apple trees are obliged to spray their trees, before the end of March, 1935, with 'carbolineum', lime sulphur mixture, or all other means of treating fruit trees; they may also use preparations with a nicotine basis for spraying carried out before the blossom opens. This Ordinance will remain in force until 1 June, 1935. (*Amtliche Pflanzenschutzbestimmungen*, Berlin, 1. März 1935, Bd. VII, Nr. 3, S. 10-11).

Argentine Republic. — By Decree No. 55.057 of 19 January, 1935, railway companies and other transport services which accept and transport vegetables and fresh fruits in contravention of the provisions of the Decree No. 43.471 of 16 June, 1934 [see this *Bulletin*, 1934, No. 9, p. 203], will be liable to a fine of from five to one thousand 'pesos', national currency. (*Boletín Oficial de la República Argentina*, Buenos Aires, 30 de enero de 1935, año XLIII, núm. 12189, págs. 1153 y 1154).

Belgian Congo. — The Decrees Nos. 24/Agri. and 171 24/Agri. of 29 September and 2 November, 1934, providing for assistance in the control of locust invasions, regarded as public calamities, in the Provinces of Costermansville and Léopoldville, contain the same measures already adopted for the Province of Lusambo [see this *Bulletin*, 1935, No. 2, p. 36]. (*Bulletin Administratif du Congo Belge*, Léopoldville-Kalina, 1934, 23^{me} année, n° 21 (10 novembre), p. 634-635, and n° 22 (25 novembre), p. 648-649).

Cyrenaica. — The Decree of the Governor, No. 35637, dated 28 January, 1935, establishes that the presence of *Chlorita lybica* in vine-yards should be reported by the owner, or, in his absence, by the tenant, within 10 days following the appearance of the insect. Control by means of spraying is compulsory for vines situated in localities in the Colony which, on recommendation by the Bureau for Agricultural Services, are declared infested by the insect. The above Bureau is charged with the control which it will carry out free of charge with the means it has at its disposal. Both native and European owners of vine-yards are obliged to provide the labour necessary for spraying. (*Bollettino Ufficiale del Governo della Cirenaica*, Bengasi, 12 febbraio 1935, anno XXIV, Suppl. n. 1 al Bollettino del mese di gennaio 1935, pp. 63-64).

Spain. — By 'Orden' of 18 January, 1935, all consignments of potatoes intended for export abroad, proceeding from the Balearic and Canary Islands as well as from continental Spain are permanently subject to previous inspection and the delivery of corresponding phytopathological certificates.

The Agronomical Engineers, officially authorised by the National Phytopathological Service, will carry out the phytosanitary inspection and will deliver the phytopathological certificate conforming to the model agreed upon by the International Conventions or to the special exigencies of the countries of destination.

The phytopathological certificate will constitute a document independent of all those necessary for exportation, seeing that the said certificates will contain no other notifications than those of the Inspecting Engineer of the National Phytopathological Service.

The Customs of continental Spain and of the Balearic Islands, as well as the Administrations of the Free Ports of Las Palmas and Santa Cruz de Tenerife, will neither despatch nor authorise the expedition of any consignment of potatoes which is not accompanied by the corresponding certificate of phytopathological inspection. (*Gaceta de Madrid*, Madrid, 22 enero 1935, año CCLXXIV, tomo I, núm. 22, págs. 569 y 660).

United States of America. — By revision of Notice of Quarantine No. 16 (Domestic), approved on 8 December, 1934 and effective on 1 January, 1935, it shall be unlawful to move any canes of sugarcane, or cuttings or parts thereof, or sugarcane leaves, or bagasse, from the territories of Hawai and Puerto Rico into or through any other Territory, State, or District of the United States. This prohibition shall not apply to the movement of the materials mentioned by the United States Department of Agriculture for scientific or experimental pur-

poses, nor to the movement of specific materials which the Department may authorize under permit, on condition that they have been or are to be so treated, processed, or manufactured that, in the judgement of the Department, their movement will involve no pest risk. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Revision of Sugarcane Quarantine No. 16 (Domestic)*, Washington, 1935, 1 p.).

* * By amendment No. 2 to revised rules and regulations supplemental to Notice of Quarantine No. 37 on account of certain injurious insects and fungous diseases, approved on 14 January, 1935, and effective on the same date, in regulation 3 provision is made for the entry into the United States of narcissus (daffodil and jonquil) bulbs from foreign countries on and after 15 December, 1936, without limitation as to quantity or use. In regulation 7 provision is made for the use of sterilized or otherwise safeguarded soil as packing for nuts and seeds as well as for bulbs and cormes. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Modification of Nursery Stock, Plant, and Seed Quarantine Regulations*, Washington, 1935, 4 pp. [Mimeographed]).

* * At the same time has been announced the removal and revocation of the quarantine placed by Notice of Quarantine No. 62 (Narcissus Bulb Quarantine) upon each and every State of the continental United States and the District of Columbia. Such removal and revocation will take effect on 1 April, 1935. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Notice of Lifting of Quarantine No. 62 - Narcissus Bulb Quarantine*, Washington, 1935, 1 p. [Mimeographed]).

* * The revision of regulation 2 of the black stem rust [*Puccinia graminis*] quarantine, dated 5 February, 1935, and effective on and after 20 February, 1935, exempts from all restrictions the interstate movement of cuttings (without roots) of *Mahonia* when shipped for decorative purposes and not for propagation. (United States Department of Agriculture. Bureau of Entomology and Plant Quarantine. *Modification of Black Stem Rust Quarantine Regulations*, Washington, 1935, 1 p.).

France. — A Ministerial Decree of 21 January, 1935 nominates members of the Commission instituted by the Ministerial Decree of 30 October, 1934, with a view to studying the problems relative to the use of toxic substances for the control of parasites, insects and animals injurious to agriculture [see this *Bulletin*, 1935, No. 2, p. 39]. (Ministère de l'Agriculture. Direction de l'Agriculture. *Bulletin de l'Office de Renseignements Agricoles*, Paris, 15 février 1935, année 1935, n° 4, p. 80).

* * A Ministerial Decree of 15 February, 1935, indicates, *inter alia*, the laboratories selected for analysing samples of copper compounds used as fungicides, taken by the Service for the suppression of frauds. (*Ibid.*, 1^{er} mars 1935, n° 5, p. 107-108).

French Indo-China. — A Decree of 26 December, 1934, establishes the following:—

Art. 1. — The provisions contained in the Decree of 5 April, 1934 are abrogated and replaced by the following:—

Art. 2. — Importation into Indo-China is authorised of the fruits indicated in Article 6 below originating from countries not declared to be infested by the Mediterranean Fruit-fly (*Ceratitis capitata*).

On their arrival in Indo-China these fruits will be subject to compulsory inspection by the Phytopathological Service and a certificate of inspection will be delivered.

If these fruits are accompanied by a phytosanitary certificate of the country of origin they will be exempt from all phytosanitary charges.

In all other cases a tax of one piastre per 100 kilogramme gross weight is payable, fixed by the Addendum of 20 May, 1933 to the Decree of 9 February, 1933.

Art. 3. — The importation into Indo-China of fruits indicated in Article 6 below, is strictly forbidden when they come from the following regions, recognised as being infested by the Mediterranean Fruit-fly:—

Europe: France, Spain, Italy, Sicily, Greece, Madeira, the Azores, Malta, Turkey;

Asia: Syria, Palestine, Cyprus;

Africa: the African continent, the Canary Islands, Cape Verde Islands, Mauritius;

America: Argentine Republic, Brazil, the Bermudas;

Oceania: Australia, New Zealand, Hawaii.

Art. 4. — By repeal of the provisions contained in Article 3, it is authorised, in exceptional cases, to import the fruits indicated in Article 6 below originating in France, Algeria, Tunis, the Union of South Africa, Australia, countries declared infested by the Mediterranean Fruit-fly, but at present exercising phytosanitary control over fruits for export which present sufficient guarantees.

In order to be admitted into Indo-China, fruits from the above mentioned countries should be accompanied by a phytosanitary certificate of the country of origin giving exact details of the fruit exported to Indo-China and bearing the name of the importer.

These fruits will be subject to compulsory inspection on their arrival in Indo-China by the Phytopathological Service and a certificate of inspection will be delivered.

Fruits admitted under these conditions are subject to a tax of one piastre per 100 kilogrammes gross weight, fixed by the Addendum of 20 May, 1933 to the Decree of 9 February, 1933.

Art. 5. — All consignments conforming to the provisions contained in the preceding Articles, whatever may be their origin, will be refused if the sanitary condition is in doubt and will be burnt if the sanitary condition is bad, in conformity with the Decree of 3 October, 1932.

All consignments originating from countries infested by the Mediterranean Fruit-fly and not conforming to the provisions contained in Article 4 will be considered as doubtful and refused.

Art. 6. — List of fruits subject to phytosanitary control:— *Acras sapola* (sapodilla), *Anona muricata* (custard apple), *Artocarpus incisa* (bread fruit), *Averrhoa carambola* (carambola), *Carica papaya* (papaw), *C. quercifolia* (dwarf papaw), *Citrus bigaradia* (bitter orange), *C. indica* (citron), *C. limonum* (lemon), *C. nobilis* (mandarin orange and its hybrids), *C. japonica* (Chinese orange), *C. sinensis* (sweet orange), *C. decumana* (grapefruit), *Diospyros decandra* (persimmon), *Eriobotrya japonica* (loquat), *Fortunella japonica* (kumquat), *Garcinia mangostana* (mangosteen), *Litchi chinensis* (litchi), *Mangifera indica* (mango), *Persea gratissima* (avocado pear), *Psidium guajava* (guava), *Prunus armeniaca* (apricot), *P. persica* (peach), *P. persica* var. *nectarina* [*nucipersica*] (nectarine), *P. communis* (plum), *Punica granatum* (pomegranate), *Pyrus communis* (pear), *P. malus* (apple).

Art. 7. — The present Decree, which applies to all Indo-China, is applicable to the ports of Saigon and Haiphong. (*Journal Officiel de l'Indochine française*, Hanoi, 19 janvier 1935, XLVII^e année, n^o 6, p. 262).

Italy. — The Ministry of Agriculture and Forests has published a list of communes declared infested by grape phylloxera [*Phylloxera vastatrix*] or suspected of being infested up to 31 December, 1934. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 21 gennaio 1935, anno VII, n. 3, pp. 281-306).

*** In order to prevent the poisoning of bees, the Prefect of the province of Ravenna by Decree dated 16 January, 1935 has prohibited the spraying of fruit trees with arsenicals, during the period of blossoming and particularly from the time when the flowers open until the petals fall. (*La Romagna Agricola e Zootechnica*, Ravenna, marzo 1935, anno XXIX, n. 3, p. 75).

*** By Ministerial Decree of 18 January 1935, wheat has been added to the list of merchandise the importation of which is forbidden. (*Gazetta Ufficiale del Regno d'Italia*, Roma, 28 gennaio 1934, anno 76^o, n. 23, p. 418).

*** By Ministerial Decree of 23 January, 1935, according to the Royal Decree-Law No. 1754 of 12 August, 1927 containing provisions for the development of olive growing, and the Law No. 987 of 18 June, 1931 containing measures for the protection of cultivated plants and agricultural products against adverse causes also for the organisation of services relative thereto [see this *Bulletin*, 1931, No. 9, p. 106], a compulsory syndicate has been formed for the improvement and development of olive-growing in the province of Teramo.

The contribution payable by each member of the syndicate cannot exceed 10 centesimi of lira per olive tree in bearing. (*Bollettino Ufficiale del Ministero dell'Agricoltura e delle Foreste*, Roma, 11 febbraio 1935, anno VII, n. 5, pp. 654-655).

*** By four Ministerial Decrees of 7 February, 1935 and in accordance with Article 17 of Law No. 987 of 18 June, 1931, a compulsory syndicate has been established for improving and developing the cultivation of citrus plants in the provinces of Syracuse, Messina, Palermo and Catania respectively.

The annual contribution payable by each member of the syndicate cannot exceed 10 centesimi of lira per citrus plant in bearing. (*Ibid.*, 21 febbraio 1935, n. 6, pp. 882-884, 886-889).

* * By Ministerial Decree of the same date and in accordance with the Royal Decree-Law No. 1754 of 12 August, 1927, also the Law No. 987 of 18 June, 1931, a compulsory syndicate has been established for improving and developing olive growing in the province of Terni.

The contribution payable by each member of the syndicate cannot exceed 10 centesimi per olive tree in bearing. (*Ibid.*, pp. 884-886).

* * By Ministerial Decree of 8 February, 1935, the commune of S. Giovanni d'Asso in the province of Siena is declared infested with grape phylloxera [*Phylloxera vastatrix*]. (*Ibid.*, pp. 889-890).

* * By Ministerial Decree of 12 February, 1935, the control of the Oriental Peach Moth (*Cydia Laspeyresia*, *molesta*) is made compulsory in the provinces of Bologna, Ferrara, Verona, Padua, Treviso, and Venice; this control should be effected chiefly by collecting the infested shoots, the stumps left after topping and the fruits and also by other methods which will be indicated by the 'RR. Osservatori fitopatologici'. The work of control will be carried out by, and at the expense of the holders of lands infested by the insect. (*Ibid.*, 1^o marzo 1935, n. 7, pp. 1093-1094).

* * According to the Royal Decree-Law No. 1754 of 12 August, 1927, also the Law No. 987 of 18 June, 1931, a compulsory Syndicate has been established by Ministerial Decree of 2 March, 1935, for the improvement and development of olive growing in the province of Messina.

The contribution payable by members of the Syndicate cannot exceed 10 centesimi di lira per tree in bearing. (*Ibid.*, 21 marzo 1935, n. 9, pp. 1331-1332).

Morocco (French Zone). — By Decree of 22 January, 1935, owners or tenants of lands situated in the territory of the bureau of native affairs of Ahermoumou, region of Taza, are authorised to destroy wild boars on their lands at all times and by all means, except by fire. (Empire Chérifién. Protectorat de la République Française au Maroc. *Bulletin Officiel*, Rabat, 1^{er} février 1934, XXIV^e année, n^o 1162, p. 101).

* * By Decree of 19 February, 1935, owners or tenants of land situated in the territory of the annex of civil control of Oulmès district of Meknès, are authorised to destroy wild boars on their lands at all times and in all ways except by fire. (*Ibid.*, 1^{er} mars 1935, n^o 1166, p. 238).

* * By Decree of 27 February, 1935, owners or tenants of land situated in the territory of the circumscription of civil control of Taza-banlieue are authorised to destroy wild boars on their land at all times and by all means except by fire. (*Ibid.*, 8 mars 1935, n^o 1167, p. 262).

Sweden. — By Royal Notification No. 503 of 12 October, 1934, the Plant Protection Service has been charged with the phytosanitary inspection of consignments of potatoes intended for export.

Whoever would export potatoes should apply in writing for phytosanitary inspection at least five days before the proposed day of export.

The application should give the names of the producer, exporter and importer, the date and place of export, the size of the consignment and the nature of the packing material.

The Plant Protection Service will deliver a phytosanitary certificate if: (a) the inspection shows that the potatoes are free from wart disease (*Synchytrium endobioticum*), Colorado beetle (*Leptinotarsa decemlineata*) and potato tuber moth (*Phthorimaea operculella*); (b) the potatoes as a whole attacked by blight (*Phytophthora infestans*), dry rot (*Fusarium*), common and powdery scab (*Actinomyces* and *Spongospora subterranea*), bacterial diseases (wet rot) and other diseases do not exceed 4%; (c) the potatoes are not damaged by frost; (d) the packing corresponds to the exigencies of the country of destination; and (e) the exporter declares that the potatoes come from a locality exempt from wart disease, Colorado beetle, potato tuber moth or eelworm (*Heterodera schachtii*).

The exporter should put the necessary labour at the disposal of the inspector and furnish him with all information that he may require. The exporter should also revise and keep up to date a list of producers of potatoes for export and should ascertain that each package of potatoes bears the mark of the producer.

The charges of inspection are born by the exporter. (*Deutsches Handels-Archiv*, Berlin, 15. Dezember 1934, 88. Jahrg., 2. Dezemberheft, S. 4291-4292).

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After having given the general characteristics of each important species, a study is made of the feet, head, teeth, hair, geographical distribution, biology, and mentioning the external parasites attacking them.

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[Contains, *inter alia*:—

Chapitre XX. — Parasites animaux (p. 313-337, 2 fig.).

Chapitre XXI. — Parasites cryptogamiques et bactériens (p. 338-377)].

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[This volume treats in a very popular manner the control of agents (plant and animal) injurious to plants and domestic animals and causing losses in domestic economy.

The contents are arranged in the following order: general remarks, fruit growing; viticulture; horticulture; agriculture properly so called; cultivation of pastures; stock-breeding; forestry; agents harmful to houses, to foods, to man, etc. At the end of each chapter will be found a list of the principal means of control and a description of the method of preparation and use].

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[Contains:—
Capitolo I. — Influenza biologica della radiazione penetrante.
Capitolo II. — Azione biologica a distanza dei metalli.]

Capitolo III. — Influenza biologica dei raggi gamma.

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NOTES

Entomological Society of Belgium. — This Society, whose head-quarters is in Brussels, has decided to establish a Section of Applied Entomology, which among other objects, proposes to discuss and make known each month the situation in Belgium and the Belgian Congo from the entomological point of view and to discuss, from the same view point, the legislative measures with regard to the national and international circulation of plants.